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A PRELIMINARY ASSESSMENT OF POLLUTION FROM PASSENGER  
CARS AND BUSES AT ST. (U) FEDERAL AVIATION  
ADMINISTRATION WASHINGTON DC OFFICE OF ENVIR.  
H M SEGAL JUL 86 FAA-EE-86-7

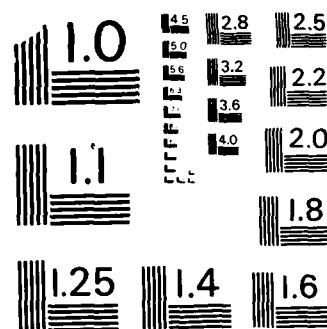
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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS - 1963-A

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A PRELIMINARY ASSESSMENT OF POLLUTION FROM PASSENGER CARS  
AND BUSES AT STAPLETON INTERNATIONAL AIRPORT



U. S. Department of Transportation  
FEDERAL AVIATION ADMINISTRATION  
Office of Environment and Energy  
Washington, D. C., 20591

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H. M. Segal

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16. Abstract  This report summarizes the results of an air quality modeling exercise for Stapleton International Airport. The analysis identifies the impact of automobiles and mini-buses on air quality at the airport. Concentrations of Carbon Monoxide were estimated at seven receptors placed at critical locations in the terminal area. The Graphical Input Microcomputer Model was used in this screening analysis.  The following assumptions were used in the analysis:  1. vehicle activity = maximum 2. wind speed = 1 meter per second 3. wind directions = 270 and 240 degrees 4. temperature = 0 degrees F. and 5. Pasquill/Gifford stability class was "D".  The maximum one hour concentration at the most critical receptor was 26 mg/m3. The one hour National Ambient Air Quality Standard for Carbon Monoxide is 40 mg/m3.			
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A PRELIMINARY ASSESSMENT OF POLLUTION FROM PASSENGER CARS  
AND BUSES AT STAPLETON INTERNATIONAL AIRPORT

A series of modeling runs was made to calculate the concentrations of pollutants from motor vehicles operating at Stapleton International Airport (DEN). The Graphical Input Microcomputer Model (GIMM), which was demonstrated to Environmental Protection Agency (EPA), Federal Aviation Administration (FAA), Airport Authority, and Colorado State personnel on April 2-4, was employed in this analysis. This model and its scenario were modified to reflect comments by state personnel at the April 2 meeting. As a result, there are now three route scenarios: one for the main traffic flow at the airport, and the other two for mini-bus travel to the north and south parking and car rental areas. In addition the model now incorporates the high altitude version of the Mobile III emissions model.

In addition to evaluating the environmental impact of motor vehicles, the model has the capability to evaluate the environmental impact of aircraft. This capability was not exercised because persons at the April 2 meeting seemed to be primarily interested in passenger vehicle and mini-bus flow around the airport terminal.

The entire analysis is for screening purposes only and includes extreme conditions for all parameters. The status of the GIMM model (1) is that it is in the advanced stages of development but is not fully validated. Initial validation checks have been made and full validation is expected by January 1987.

Results are summarized for the main pollutant of concern at airports - carbon monoxide (CO). However, emission rates and concentrations for all five criteria pollutants are listed. Emission data for the carbon monoxide, hydrocarbons and nitrogen oxides criteria pollutants were extracted directly from the latest version of AP-42 (2). However, emission data for the remaining pollutants, sulfur oxides and particulates, were not well defined in this document. Their values were obtained from an earlier version of AP-42 and telephone contacts with appropriate industrial personnel.

Three scenarios are reported; one for the main vehicular travel (primarily autos) (Figures 1-3), and the others for mini-bus travel to the airport's south (Figures 4-6) and north (Figures 7-9) parking and car rental areas. Each scenario report has the following format:

1. an airport map showing the route traversed
2. a printout of results for a wind direction of 270 degrees
3. a printout of results for a wind direction of 240 degrees

Roadway numbers are displayed on the map near each roadway. The seven receptors are identified by Roman numerals I thru VII. Vehicular activity is noted on the right side of each map. Maximum concentrations occur at

receptors I, II, and III. Concentrations at these receptors for each scenario are plotted in Figure 10 which also lists the meteorological and vehicle activity assumptions of all computer runs. Total concentrations from passenger, ancillary and mini-bus vehicles are obtained by adding up the corresponding receptor values of all three scenarios.



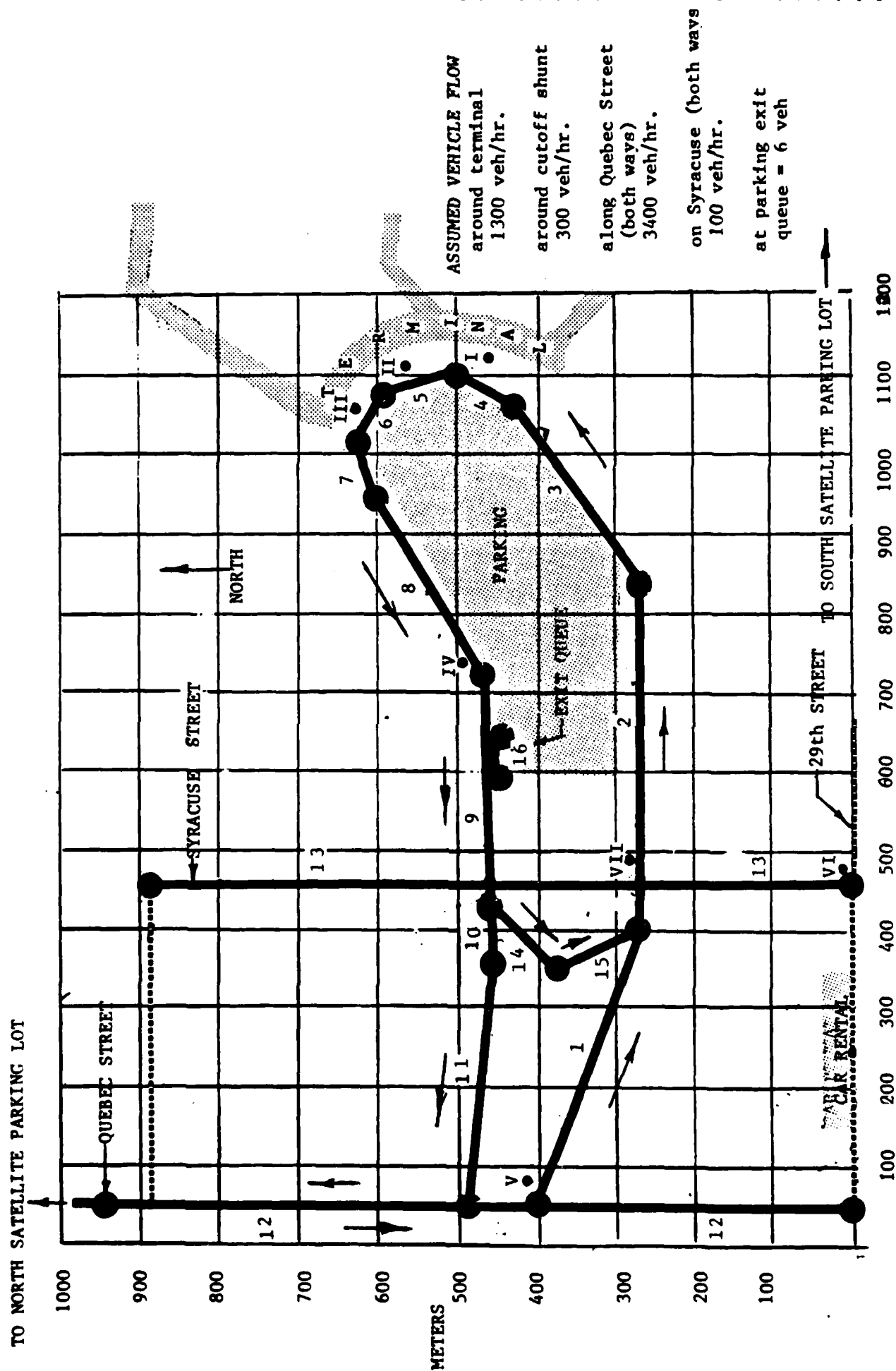
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Dist

Available

Dist	Available, or Special
A-1	

# PASSENGER AND ANCILLARY VEHICLE FLOW (STAPLETON INTERNATIONAL AIRPORT)



METERS

Figure 1

**PASSENGER AND ANCILLARY VEHICLE POLLUTION ON ROUTES AROUND  
DENVER INTERNATIONAL AIRPORT**

Temperature = 0 degrees F.  
Wind Direction = 270 degrees

**EMISSION REPORT (ROADWAYS)  
JUN-18- (1400 HR.)**

**INPUTS**

**OUTPUTS**

COORDINATES OF SOURCES (M):  
ORIGIN AT (0, 0)

INITIAL  
PARAMETERS(M)

(MOBILE 3)

EMISSION RATES

ROAD: SIG : SIG : PLANE : CARS/MPH : %COLD : TEMP : YEAR :

#	X1	Y1	X2	Y2	Z	Y	HT.	HR	START	(F)	CO	HC	NOX	SOX	PART	
1:	46,	397,	398,	263	1.5	13	11	1000	30	010	011986	4.91E00	4.45E-11	2.49E-11	5.87E-41	2.02E-2
2:	398,	264	844,	263	1.5	13	11	1300	30	010	011986	7.40E00	6.86E-11	3.83E-11	9.01E-41	3.11E-2
3:	842,	261	1057,	424	1.5	13	11	1300	20	010	011986	6.58E00	5.58E-11	2.06E-11	5.45E-41	1.25E-2
4:	1056,	422	1102,	501	1.5	13	11	1300	5	010	011986	6.43E00	4.90E-11	7.60E-21	1.85E-41	6.37E-2
5:	1095,	501	1069,	590	1.5	13	11	1300	5	010	011986	6.61E00	5.04E-11	7.81E-21	1.90E-41	6.56E-2
6:	1071,	591	1005,	622	1.5	13	11	1300	5	010	011986	5.13E00	3.91E-11	6.06E-21	1.47E-41	5.07E-2
7:	1005,	622	936,	594	1.5	13	11	1300	5	010	011986	5.11E00	3.89E-11	6.04E-21	1.46E-41	5.07E-2
8:	936,	594	718,	460	1.5	13	11	1300	20	010	011986	6.28E00	5.33E-11	1.97E-11	5.20E-41	1.61E-2
9:	716,	460	436,	450	1.5	13	11	1300	30	010	011986	4.68E00	4.34E-11	2.42E-11	5.71E-41	1.97E-2
10:	432,	459	343,	445	1.5	13	11	1000	30	010	011986	1.15E00	1.07E-11	5.95E-21	1.40E-41	4.85E-2
11:	343,	444	51,	474	1.5	13	11	1000	35	010	011986	3.25E00	3.13E-11	2.00E-11	4.57E-41	1.58E-2
12:	53,	873	47,	0	1.5	13	11	3400	35	010	011986	3.28E01	3.16E00	2.02E00	4.60E-31	1.60E-1
13:	452,	874	460,	0	1.5	13	11	100	30	010	011986	1.12E00	1.03E-11	5.77E-21	1.36E-41	4.49E-2
14:	431,	458	350,	364	1.5	13	11	300	30	010	011986	4.75E-11	4.40E-21	2.46E-21	5.77E-51	2.00E-2
15:	351,	363	399,	260	1.5	13	11	300	30	010	011986	4.35E-11	4.03E-21	2.25E-21	5.33E-51	1.84E-2
16:	600,	460	635,	460	1.5	13	11	QUEUE	0	010	011986	3.23E00	2.43E-11	3.77E-21	8.75E-51	3.03E-2

TOTAL : 9.55E01 8.44E00 3.98E00 9.32E-31 3.23E-11

**DISPERSION REPORT**

**INPUTS**

**OUTPUT**

DATE : HR:W:S:WD : P/G: RECEPTOR :  
IN/S:DEG:A=1:

CONCENTRATION GM/M<sup>3</sup>

				NO.	X	Y	CO	HC	NOX	SOX	PART
JUN-18-86:14:	11270	4:	1	1117	456	11.76E-2	1.39E-3	3.23E-4	1.74E-7	2.67E-5	
JUN-18-86:14:	11270	4:	2	1105	560	12.09E-2	1.63E-3	3.23E-4	1.7.87E-7	2.72E-5	
JUN-18-86:14:	11270	4:	3	1043	610	11.82E-2	1.41E-3	2.67E-4	1.6.46E-7	2.24E-5	
JUN-18-86:14:	11270	4:	4	735	488	14.04E-3	3.56E-4	1.68E-4	1.3.88E-7	1.34E-5	
JUN-18-86:14:	11270	4:	5	82	406	17.78E-3	7.49E-4	4.79E-4	1.1.09E-6	3.78E-5	
JUN-18-86:14:	11270	4:	6	477	12	19.95E-4	9.43E-5	5.73E-5	1.1.32E-7	4.57E-6	
JUN-18-86:14:	11270	4:	7	484	278	13.47E-3	3.25E-4	1.89E-4	1.4.40E-7	1.52E-5	

Figure 2



**PASSENGER AND ANCILLARY VEHICLE POLLUTION ON ROUTES AROUND  
DENVER INTERNATIONAL AIRPORT**

Temperature = 0 degrees F.

Wind Direction = 290

**EMISSION REPORT (ROADWAYS)  
JUN-16- (1400 HR.)**

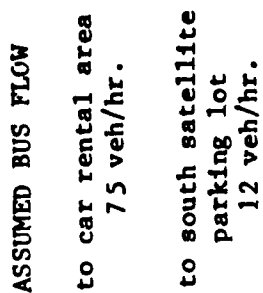
INPUTS													OUTPUTS				
COORDINATES OF SOURCES (M) ORIGIN AT (0 , 0)					INITIAL PARAMETERS(M)			(MOBILE 3)					EMISSION RATES				
ROAD:					SIG	SIG	PLUME	CARS/HR	INPH/HR	%COLD	TEMP	YEAR	GM/SEC				
#	X1	Y1	X2	Y2	Z	Y	HT.	HR	START	(F)			CO	HC	NOX	SOX	PART
1:	46,	397,	398,	263,	1.5	13	11	1000	30	010	011986		4.81E00	4.45E-11	2.49E-11	5.87E-4	2.11E-2
2:	398,	264,	844,	263,	1.5	13	11	1300	30	010	011986		7.40E00	6.86E-11	3.83E-11	9.01E-4	3.11E-2
3:	842,	261,	1057,	424,	1.5	13	11	1300	20	010	011986		6.58E00	5.58E-11	2.06E-11	5.45E-4	1.93E-2
4:	1056,	422,	1102,	501,	1.5	13	11	1300	5	010	011986		6.43E00	4.90E-11	7.60E-21	1.85E-4	6.97E-3
5:	1099,	501,	1069,	590,	1.5	13	11	1300	5	010	011966		6.61E00	5.04E-11	7.81E-21	1.90E-4	6.56E-3
6:	1071,	571,	1005,	622,	1.5	13	11	1300	5	010	011986		5.13E00	3.91E-11	6.06E-21	1.47E-4	5.07E-3
7:	1005,	622,	938,	594,	1.5	13	11	1300	5	010	011986		5.11E00	3.89E-11	6.04E-21	1.46E-4	5.07E-3
8:	938,	594,	718,	460,	1.5	13	11	1300	20	010	011986		6.28E00	5.33E-11	1.97E-11	5.20E-4	1.80E-2
9:	718,	460,	436,	450,	1.5	13	11	1300	30	010	011986		4.68E00	4.34E-11	2.42E-11	5.71E-4	1.97E-2
10:	432,	459,	343,	445,	1.5	13	11	1000	30	010	011986		1.15E00	1.07E-11	5.95E-21	1.40E-4	4.85E-3
11:	343,	444,	51,	474,	1.5	13	11	1000	35	010	011986		3.25E00	3.13E-11	2.00E-11	4.57E-4	1.59E-2
12:	53,	873,	47,	011,	1.5	13	11	3400	35	010	011986		3.28E00	3.16E00	2.02E00	4.60E-2	1.63E-1
13:	452,	874,	460,	011,	1.5	13	11	100	30	010	011986		1.12E00	1.03E-11	5.77E-21	1.36E-4	4.95E-3
14:	431,	459,	350,	364,	1.5	13	11	300	30	010	011986		4.75E-11	4.40E-21	2.46E-21	5.77E-5	2.00E-3
15:	351,	363,	399,	260,	1.5	13	11	300	30	010	011986		4.35E-11	4.03E-21	2.25E-21	5.33E-5	1.84E-3
16:	600,	460,	635,	460,	1.5	13	11	QUEUE	0	010	011986		3.23E00	2.43E-11	3.77E-21	8.75E-5	2.03E-3
TOTAL :													9.55E01	8.44E00	3.98E00	9.32E-3	3.23E-1

**DISPERSION REPORT**

INPUTS										OUTPUT						
DATE	HR	W/S	WD	P/G	RECEPTOR			CONCENTRATION GM/M <sup>3</sup>								
					NO.	X	Y	CO	HC	NOX	SOX	PART				
JUN-18-86	14:	1:240	4:	1	1116	459		1.12E-2	8.77E-4	1.83E-4	4.49E-7	1.55E-5				
JUN-18-86	14:	1:240	4:	2	1106	563		1.82E-2	1.40E-3	2.60E-4	6.26E-7	2.17E-5				
JUN-18-86	14:	1:240	4:	3	1052	627		2.48E-2	1.93E-3	3.96E-4	9.67E-7	3.34E-5				
JUN-18-86	14:	1:240	4:	4	735	491		6.56E-3	5.92E-4	3.84E-4	7.12E-7	2.46E-5				
JUN-18-86	14:	1:240	4:	5	84	410		1.06E-2	1.01E-3	6.21E-4	1.42E-6	4.93E-5				
JUN-18-86	14:	1:240	4:	6	480	111		1.97E-4	1.83E-5	1.02E-5	2.40E-8	8.30E-7				
JUN-18-86	14:	1:240	4:	7	485	280		1.10E-3	1.04E-4	6.41E-5	1.47E-7	5.10E-6				

Figure 3

## DIESEL BUS ROUTES



6

**BUS POLLUTION ON ROUTES TO  
CAR RENTAL AND SOUTH PARKING AREAS**

Temperature = 0 degrees F.  
Wind Direction = 270 degrees

**EMISSION REPORT (ROADWAYS)  
JUN-19- (1400 HR.)**

**INPUTS**

**OUTPUTS**

COORDINATES OF SOURCES (M)					INITIAL			(MOBILE 3)				EMISSION RATES					
ORIGIN AT (0, 0)					PARAMETERS(M)												
ROAD:					SIG	SIG	PLUME	CARS/	IMPH	%COLD	TEMP	YEAR	GM/SEC				
#	X1	Y1	X2	Y2	Z	Y	HT.	HR	START	(F)		CO	HC	NOX	SOX	PART	
1	245,	0	457,	0	1.5	13	11		150	20	000	0.1986	4.22E-11	3.35E-21	1.85E-21	4.95E-51	1.71E-61
2	456,	0	670,	0	1.5	13	11		24	20	000	0.1986	6.82E-21	5.41E-31	2.98E-31	7.99E-61	2.76E-41
3	459,	0	456,	267	1.5	13	11		174	30	000	0.1986	4.19E-11	3.82E-21	3.03E-21	7.23E-51	2.50E-31
4	454,	266	841,	264	1.5	13	11		87	30	000	0.1986	3.02E-11	2.75E-21	2.19E-21	5.20E-51	1.85E-31
5	843,	267	1063,	427	1.5	13	11		87	20	000	0.1986	3.14E-11	2.49E-21	1.37E-21	3.68E-51	1.27E-31
6	1061,	424	1106,	504	1.5	13	11		87	5	000	0.1986	3.06E-11	1.95E-21	5.06E-31	1.24E-51	4.28E-41
7	1106,	505	1077,	592	1.5	13	11		87	5	000	0.1986	3.06E-11	1.95E-21	5.06E-31	1.24E-51	4.28E-41
8	1077,	591	1013,	622	1.5	13	11		87	5	000	0.1986	2.37E-11	1.51E-21	3.92E-31	9.61E-61	3.33E-41
9	1009,	620	943,	597	1.5	13	11		87	5	000	0.1986	2.33E-11	1.49E-21	3.86E-31	9.45E-61	3.27E-41
10	942,	597	717,	463	1.5	13	11		87	20	000	0.1986	3.02E-11	2.40E-21	1.32E-21	3.55E-51	1.22E-31
11	717,	462	435,	457	1.5	13	11		87	30	000	0.1986	2.21E-11	2.02E-21	1.60E-21	3.81E-51	1.32E-31
12	435,	459	351,	370	1.5	13	11		87	30	000	0.1986	9.60E-21	8.74E-31	6.95E-31	1.65E-51	5.71E-41
13	348,	370	394,	263	1.5	13	11		87	30	000	0.1986	9.14E-21	8.32E-31	6.61E-31	1.57E-51	5.42E-41
14	396,	267	453,	266	1.5	13	11		87	30	000	0.1986	4.32E-21	3.93E-31	3.12E-31	7.42E-61	2.57E-41
TOTAL												3.36E00	2.64E-11	1.51E-11	3.76E-41	1.30E-21	

**DISPERSION REPORT**

**INPUTS**

**OUTPUT**

DATE	HR	W/S	WD	SP/G	RECEPTOR	CONCENTRATION GM/M <sup>3</sup>						
					NO.	X	Y	CO	HC	NOX	SOX	PART
JUN-19-86	14	11	270	4	1	1119	454	17.46E-4	4.94E-5	1.61E-5	3.93E-8	1.36E-6
JUN-19-86	14	11	270	4	2	1109	556	11.10E-3	7.12E-5	2.06E-5	5.11E-8	1.76E-6
JUN-19-86	14	11	270	4	3	1056	624	19.51E-4	6.09E-5	1.61E-5	3.97E-8	1.37E-6
JUN-19-86	14	11	270	4	4	738	487	17.18E-5	6.54E-6	5.20E-6	1.24E-8	4.27E-7
JUN-19-86	14	11	270	4	5	83	410	10.00E00	0.00E00	0.00E00	0.00E00	0.00E00
JUN-19-86	14	11	270	4	6	476	12	19.99E-4	8.50E-5	5.76E-5	1.44E-7	4.97E-6
JUN-19-86	14	11	270	4	7	484	279	11.40E-4	1.28E-5	1.01E-5	2.41E-8	8.32E-7

Figure 5

**BUS POLLUTION ON ROUTES TO  
CAR RENTAL AND SOUTH PARKING AREAS**

Temperature = 0 degrees F.  
Wind Direction = 240 degrees

EMISSION REPORT (ROADWAYS)  
JUN-19- (1400 HF.)

INPUTS											OUTPUTS						
COORDINATES OF SOURCES (M):					INITIAL			(MOBILE 3)			EMISSION RATES						
ORIGIN AT (0 , 0)					PARAMETERS(M)												
GAD:					SIG	SIG	PLUME	CARS/	IMPH:	%COLD	TEMP	YEAR:	GM/SEC				
#	X1	Y1	X2	Y2	Z	Y	HT.	HR	START	(F)		CO	HC	NOX	SOX	PART	
1	245,	0	457,	0	1.5	13	11	150	20	000	0.1986	4.22E-11	3.35E-21	1.85E-21	4.95E-51	1.71E-31	
2	456,	0	670,	0	1.5	13	11	24	20	000	0.1986	6.82E-21	5.41E-31	2.98E-31	7.99E-61	2.76E-41	
3	459,	0	456,	267	1.5	13	11	174	30	000	0.1986	4.19E-11	3.82E-21	3.03E-21	7.23E-51	2.50E-31	
4	456,	266	841,	264	1.5	13	11	87	30	000	0.1986	3.02E-11	2.75E-21	2.19E-21	5.20E-51	1.80E-31	
5	843,	267	1063,	427	1.5	13	11	87	20	000	0.1986	3.14E-11	2.49E-21	1.37E-21	3.68E-51	1.27E-31	
6	1061,	424	1106,	504	1.5	13	11	87	5	000	0.1986	3.06E-11	1.95E-21	5.06E-31	1.24E-51	4.28E-41	
7	1106,	505	1077,	592	1.5	13	11	87	5	000	0.1986	3.06E-11	1.95E-21	5.06E-31	1.24E-51	4.28E-41	
8	1077,	591	1013,	622	1.5	13	11	87	5	000	0.1986	2.37E-11	1.51E-21	3.92E-31	9.61E-61	3.33E-41	
9	1009,	620	943,	597	1.5	13	11	87	5	000	0.1986	2.33E-11	1.49E-21	3.86E-31	9.45E-61	3.27E-41	
10	942,	597	717,	463	1.5	13	11	87	20	000	0.1986	3.02E-11	2.40E-21	1.32E-21	3.55E-51	1.22E-31	
11	717,	462	435,	457	1.5	13	11	87	30	000	0.1986	2.21E-11	2.02E-21	1.60E-21	3.81E-51	1.32E-31	
12	435,	457	351,	370	1.5	13	11	87	30	000	0.1986	9.60E-21	8.74E-31	6.95E-31	1.65E-51	5.71E-41	
13	348,	370	394,	263	1.5	13	11	87	30	000	0.1986	9.14E-21	8.32E-31	6.61E-31	1.57E-51	5.42E-41	
14	398,	267	453,	266	1.5	13	11	87	30	000	0.1986	4.32E-21	3.93E-31	3.12E-31	7.42E-61	2.57E-41	
TOTAL												3.36E00	2.64E-11	1.51E-11	3.76E-41	1.30E-21	

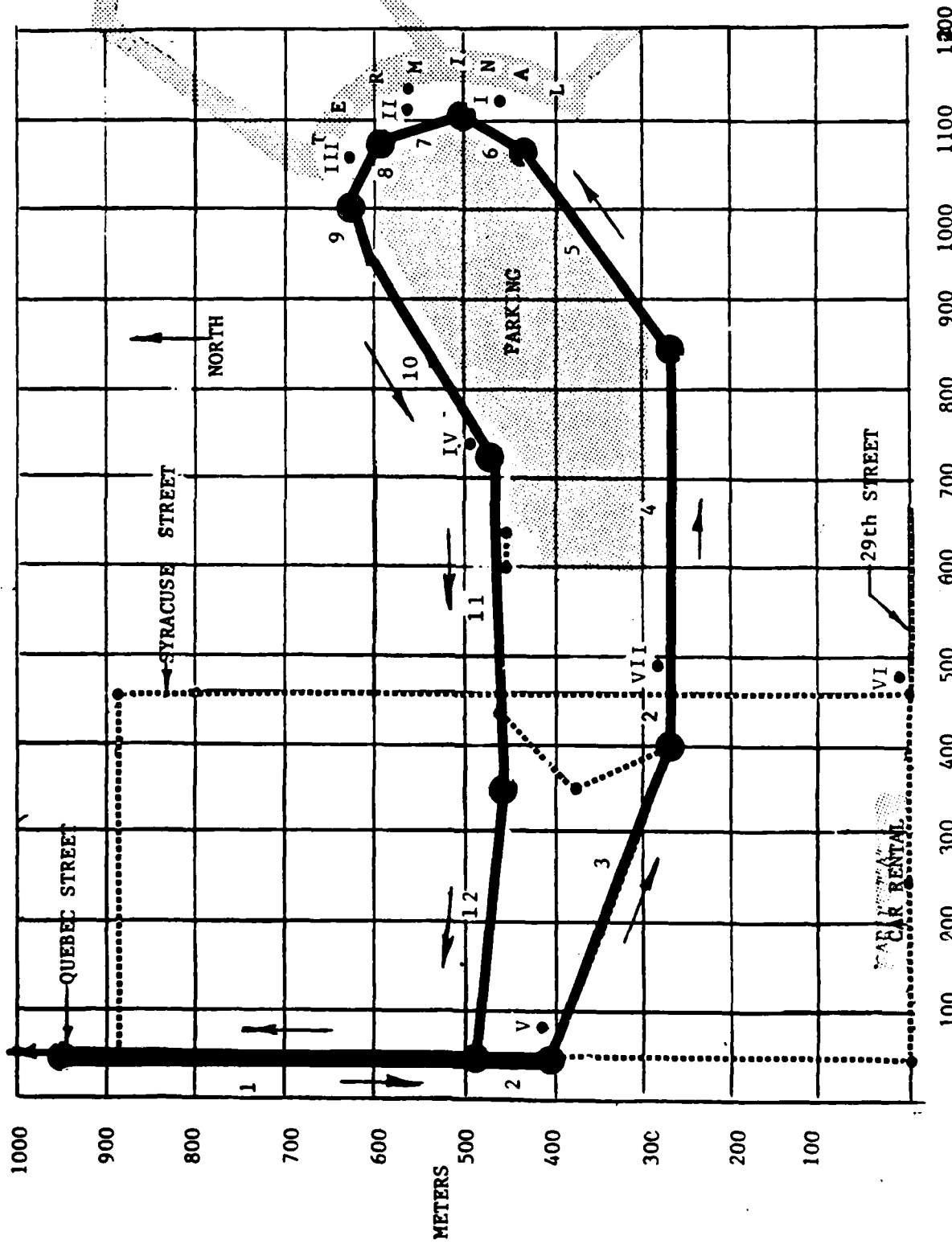
DISPERSION REPORT

INPUTS					OUTPUT										
DATE	HR	W	S	D	RECEPTOR	CONCENTRATION GM/M <sup>3</sup>									
JUN-19-86	14	1	240	4	1	1122	456	16.56E-4	4.87E-5	2.32E-5	5.99E-8	2.07E-6			
JUN-19-86	14	1	240	4	2	1113	561	19.41E-4	6.22E-5	2.00E-5	4.89E-8	1.69E-6			
JUN-19-86	14	1	240	4	3	1058	625	11.16E-3	7.66E-5	2.45E-5	6.06E-8	2.10E-6			
JUN-19-86	14	1	240	4	4	741	491	12.28E-4	2.08E-5	1.65E-5	3.92E-8	1.36E-6			
JUN-19-86	14	1	240	4	5	84	411	0.00E00	0.00E00	0.00E00	0.00E00	0.00E00			
JUN-19-86	14	1	240	4	6	478	12	18.45E-4	7.07E-5	4.58E-5	1.16E-7	4.01E-6			
JUN-19-86	14	1	240	4	7	488	279	13.33E-4	3.03E-5	2.41E-5	5.74E-8	1.98E-6			

Figure 6

# DIESEL BUS ROUTES NORTH SATELLITE PARKING LOT (STAPLETON INTERNATIONAL AIRPORT)

TO NORTH SATELLITE PARKING LOT



**BUS POLLUTION ON ROUTES TO  
NORTH SATELLITE PARKING AREAS**

Temperature = 0 degrees F.  
Wind Direction = 270 degrees

EMISSION REPORT (ROADWAYS)																	
JUN-23- (1400 HR.)																	
INPUTS											OUTPUTS						
COORDINATES OF SOURCES (M):					INITIAL			(MOBILE 3)			EMISSION RATES						
ORIGIN AT (0, 0)					PARAMETERS(M)												
ROAD#					SIG	SIG	PLUME	CARS/	IMPH	%COLD	TEMP	YEAR	GM/SEC				
#	X1	Y1	X2	Y2	Z	Y	HT.	HR	START	(F)		CO	HC	NOX	SOX	PART	
1	55	950	53	483	1.5	13	11	50	35	000	011986	1.82E-11	1.76E-21	1.57E-21	3.61E-51	1.25E-3	
2	50	485	50	403	1.5	13	11	25	35	000	011986	1.60E-21	1.55E-31	1.38E-31	3.17E-61	1.10E-4	
3	50	404	397	267	1.5	13	11	25	30	000	011986	8.41E-21	7.66E-31	6.09E-31	1.45E-51	5.01E-4	
4	398	266	842	266	1.5	13	11	25	30	000	011986	1.00E-11	9.12E-31	7.24E-31	1.73E-51	5.96E-4	
5	841	266	1062	429	1.5	13	11	25	20	000	011986	9.11E-21	7.23E-31	3.99E-31	1.07E-51	3.68E-4	
6	1063	429	1102	504	1.5	13	11	25	5	000	011986	8.10E-21	5.16E-31	1.34E-31	3.30E-61	1.14E-4	
7	1103	507	1077	594	1.5	13	11	25	5	000	011986	8.70E-21	5.55E-31	1.44E-31	3.52E-61	1.22E-4	
8	1076	594	1008	626	1.5	13	11	25	5	000	011986	7.20E-21	4.59E-31	1.19E-31	2.92E-61	1.01E-4	
9	1008	625	941	601	1.5	13	11	25	5	000	011986	6.82E-21	4.35E-31	1.13E-31	2.77E-61	9.54E-5	
10	942	602	717	466	1.5	13	11	25	20	000	011986	8.73E-21	6.92E-31	3.82E-31	1.02E-51	3.52E-4	
11	717	466	346	453	1.5	13	11	25	30	000	011986	8.37E-21	7.62E-31	6.06E-31	1.44E-51	4.95E-4	
12	346	454	50	484	1.5	13	11	25	35	000	011986	5.80E-21	5.62E-31	5.01E-31	1.16E-51	4.00E-4	
TOTAL												1.01E00	8.30E-21	5.44E-21	1.30E-41	4.51E-3	

**DISPERSION REPORT**

INPUTS										OUTPUT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
DATE	HR	W	S	WD	P	G	RECEPTOR				CONCENTRATION GM/M <sup>3</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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permit fully legible reproduction

# BUS POLLUTION ON ROUTES TO NORTH SATELLITE PARKING AREAS

Temperature = 0 degrees F.  
Wind Direction = 240 degrees

## EMISSION REPORT (ROADWAYS) JUN-23- (1400 HR.)

INPUTS											OUTPUTS						
COORDINATES OF SOURCES (M): ORIGIN AT (0 , 0)					INITIAL PARAMETERS(M)			(MOBILE 3)			EMISSION RATES						
ROAD:					SIG	SIG	PLUME	CARS/	IMPH/	%COLD	TEMP	YEAR	GM/SEC				
#	X1	Y1	X2	Y2	Z	Y	HT.	HR	START	(F)			CO	HC	NOX	SOX	PART
1	55	950	53	483	1.5	13	11	50	35	000	0	1986	1.82E-1	1.76E-2	1.57E-2	3.61E-5	1.25E-3
2	50	485	50	403	1.5	13	11	25	35	000	0	1986	1.60E-2	1.55E-3	1.38E-3	3.17E-6	1.10E-4
3	50	404	397	267	1.5	13	11	25	30	000	0	1986	8.41E-2	7.66E-3	6.09E-3	1.45E-5	5.01E-4
4	398	266	842	266	1.5	13	11	25	30	000	0	1986	1.00E-1	9.12E-3	7.24E-3	1.73E-5	5.92E-4
5	841	266	1062	429	1.5	13	11	25	20	000	0	1986	9.11E-2	7.23E-3	3.99E-3	1.07E-5	3.45E-4
6	1063	429	1102	504	1.5	13	11	25	5	000	0	1986	8.10E-2	5.16E-3	1.34E-3	3.30E-6	1.14E-4
7	1103	507	1077	594	1.5	13	11	25	5	000	0	1986	8.70E-2	5.55E-3	1.44E-3	3.52E-6	1.22E-4
8	1076	594	1008	626	1.5	13	11	25	5	000	0	1986	7.20E-2	4.59E-3	1.19E-3	2.92E-6	1.01E-4
9	1008	626	941	601	1.5	13	11	25	5	000	0	1986	6.82E-2	4.35E-3	1.13E-3	2.77E-6	9.54E-5
10	942	602	717	466	1.5	13	11	25	20	000	0	1986	8.73E-2	6.92E-3	3.82E-3	1.02E-5	3.52E-4
11	717	466	346	453	1.5	13	11	25	30	000	0	1986	8.37E-2	7.62E-3	6.06E-3	1.44E-5	4.96E-4
12	346	454	50	484	1.5	13	11	25	35	000	0	1986	5.80E-2	5.62E-3	5.01E-3	1.16E-5	4.00E-4
TOTAL													1.01E00	8.30E-2	5.44E-2	1.30E-4	4.51E-3

## DISPERSION REPORT

INPUTS										OUTPUT					
DATE	HR	W	S	WD	P	G	RECEPTOR			CONCENTRATION GM/M <sup>3</sup>					
							NO.	X	Y	CO	HC	NOX	SOX	PART	
JUN-23-86	14	1	240	4	1	1120	458	11.65E-4	1.21E-5	5.47E-6	1.42E-8	4.88E-7			
JUN-23-86	14	1	240	4	2	1109	564	12.74E-4	1.78E-5	5.14E-6	1.25E-8	4.33E-7			
JUN-23-86	14	1	240	4	3	1056	626	13.34E-4	2.19E-5	6.74E-6	1.67E-8	5.75E-7			
JUN-23-86	14	1	240	4	4	736	490	17.63E-5	6.95E-6	5.52E-6	1.31E-8	4.54E-7			
JUN-23-86	14	1	240	4	5	84	410	17.31E-5	6.67E-6	5.32E-6	1.26E-8	4.37E-7			
JUN-23-86	14	1	240	4	6	477	13	10.00E00	0.00E00	0.00E00	0.00E00	0.00E00			
JUN-23-86	14	1	240	4	7	489	278	11.34E-7	1.22E-8	9.70E-9	0.00E00	0.00E00			

Figure 9

# CARBON MONOXIDE POLLUTION FROM VEHICLES NEAR THE TERMINAL AT STAPLETON INTERNATIONAL AIRPORT

(worst case scenario)

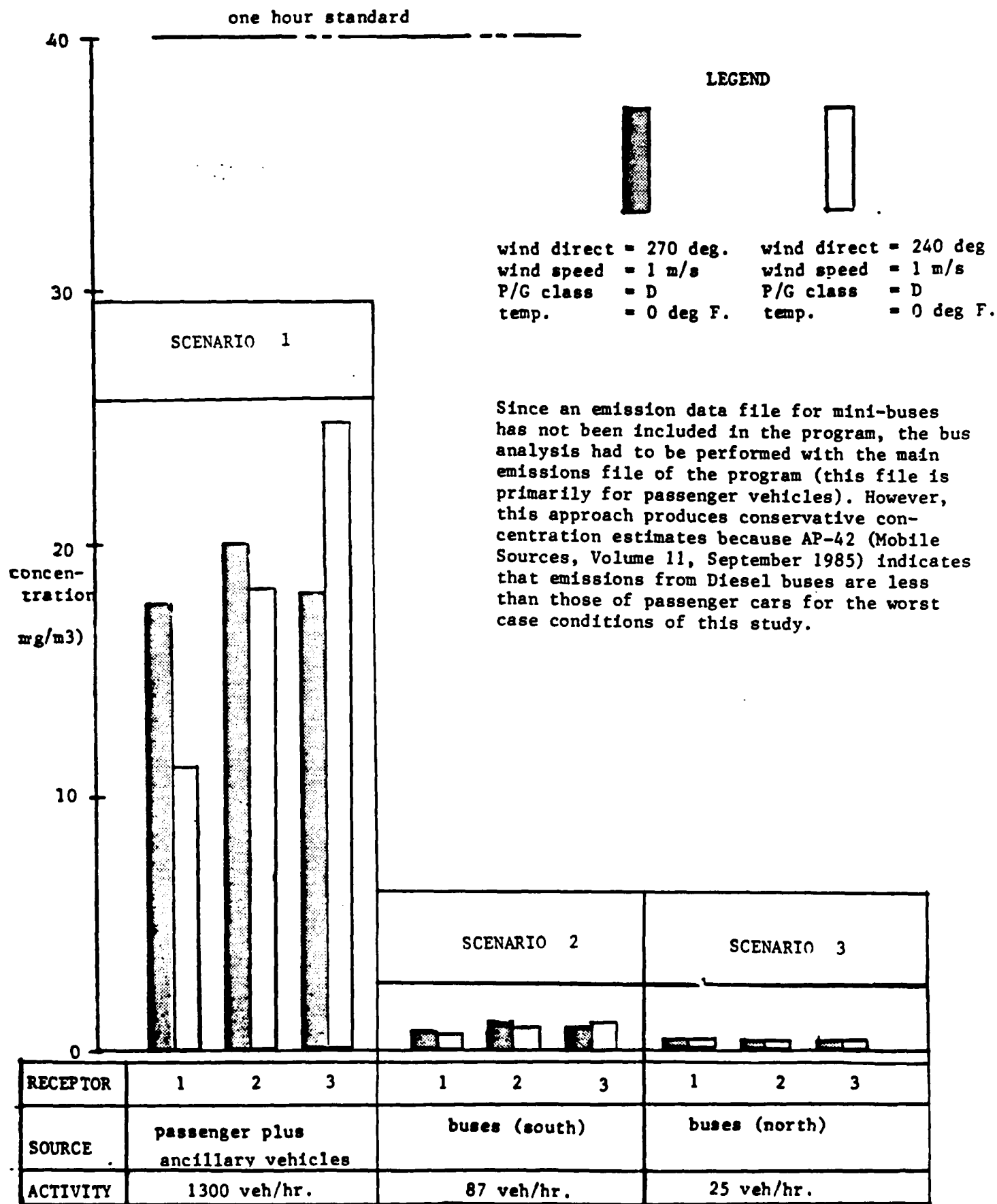


Figure 10



## REFERENCES

1. H. M. Segal; "Microcomputer Graphics in Atmospheric Dispersion Modeling"; Journal of the Air Pollution Control Association"; 23:6; June 1983
2. "Compilation of Air Pollution Emission Factors"; Volume II-Mobile Sources; AP-42 - Fourth Edition; Environmental Protection Agency-Motor Vehicle Emission Laboratory; Ann Arbor, MI.; September 1985

END

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